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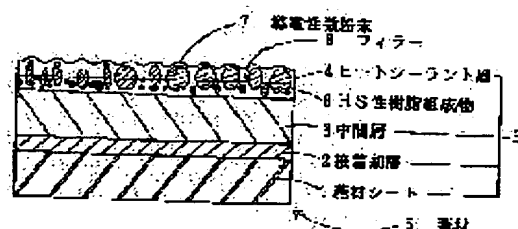
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## (54) LID MATERIAL FOR CARRIER TAPE

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To obtain excellent antistatic property, heat seal property, blocking resistance, and stable zip-up property by layering, on a base sheet, an intermediate layer formed of two kinds of copolymers whose composition is specified and a sealant layer which contains a conductive fine powder and a large-diameter inorganic filler.

**SOLUTION:** On a base sheet 1 consisting of a biaxially oriented film, an intermediate layer 3 in which 50-250 pts.wt. of styrene-butadiene copolymer containing 100 pts.wt. of styrene and 100-100 pts.wt. of butadiene is compounded with 100 pts.wt. of ethylene  $\alpha$ -olefin copolymer having a density of 0.900-0.940g/cm<sup>3</sup> is layered through an adhesive layer 2. Further, the intermediate layer 3 is coated with a heat sealant layer 4 which contains 10-350 pts.wt. of conductive fine powder 7 of tin oxide and zinc oxide and 2-30 pts.wt. of inorganic filler 6 having a particle diameter of 0.4-3 times the average coat thickness of the heat sealant layer 4 based on 100 pts.wt. of heat sealing resin composition 8 so as to form a lid material 5.



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**CLAIMS**

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[Claim(s)]

[Claim 1] In the lid material which can be heat sealed on the carrier tape which consists of a base material sheet, an interlayer, and a heat sealant layer, this base material sheet is a biaxially oriented film, and this interlayer's presentation is a consistency 0.900 thru/or 0.940 g/cm<sup>3</sup>. Lid material for carrier tapes characterized by consisting of 50 thru/or the 250 weight sections the styrene butadiene copolymer with which the styrene 100 weight section and a butadiene consist of 10 thru/or the 100 weight sections to ethylene and the alpha olefin copolymer 100 weight section.

[Claim 2] Lid material for carrier tapes according to claim 1 to which it is characterized by said heat sealant layer containing [ the conductive impalpable powder of a tin oxide system, a zinc oxide system, indium oxide, and titanium oxide ] 2 thru/or 30 weight sections for 10 thru/or the 350 weight sections, and an inorganic system filler to the heat-sealing nature resin constituent 100 weight section.

[Claim 3] Lid material for carrier tapes according to claim 1 to 2 to which the particle diameter of said inorganic system filler is characterized by being average coating thickness Mino 0.4 of a heat sealant layer thru/or 3 times.

[Claim 4] The surface resistivity of said heat sealant layer is 10<sup>5</sup>. Or lid material for carrier tapes according to claim 1 to 3 which is 10<sup>12</sup>ohm/\*\* and is that to which the charge damping time does not exceed 2 seconds.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention contains a semiconductor device in the pocket section of the crevice formed in the container made of synthetic resin which contains various industrial components, for example, a carrier tape, mounts electronic parts in it about the lid material of the carrier tape which covers and heat seals a stowage, and belongs to the lid material by which ease [ the opening exfoliation ] and peel strength were stabilized.

[0002]

[Problem(s) to be Solved by the Invention] Sheet forming, such as a polyvinyl chloride, polystyrene, acrylonitrile-butadiene-styrene copolymer (ABS), polyester (A-PET), and a polycarbonate, is usually easy for the material of the container made of synthetic resin which contains various industrial components, for example, a carrier tape. Moreover, lid material consists of a layered product which prepared the heat sealant layer which uses a heat-sealing nature resin constituent (it is hereafter indicated as HS nature resin constituent.) as a principal component in one field of a film. And the stable heat-sealing nature and detachability ability are required of lid material, and the lid material with sufficient low-temperature heat-sealing nature may present the temperature when being saved by the letter of rolling up, humidity, and the blocking high that a heat sealant layer and its tooth back stick with a pressure (hardness of a volume). Furthermore, when what formed the carrier tape which is shown in drawing 2 , and which mounted components in the pocket 10, and the lid material 5 by specific width, and formed the heat-sealing section 11 by width is kept by rolling up for a long period of time, it may become the factor which it may block [ factor ] (adhesion) and fluctuates peel strength in the non-heat sealing section 12 of the flange of a carrier tape-forming article with temperature or humidity. Moreover, it is required that a carrier tape or lid material should have the transparency of extent which it not only does not cause degradation of a semiconductor device and destruction, but can view contents with contact to the semiconductor device contained and static electricity generated when exfoliating lid material. And it is required in the mounting process of electronic parts that lid material is stabilized easily and can exfoliate. Moreover, when the difference (this specification indicates a zip rise hereafter.) of the maximum of peel strength and the minimum value accompanying advance of exfoliation is large, there is a problem that electronic parts cannot jump out or a position cannot be loaded.

[0003] This invention is made in order to maintain the above-mentioned problem and the especially excellent heat-sealing nature and to solve blocking resistance, and it makes a technical problem offer with the outstanding antistatic nature, the heat-sealing nature to a carrier tape, blocking resistance, and the stable zip rise nature of the lid material for carrier tapes.

[0004]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the lid material of this invention In the lid material which can be heat sealed on the carrier tape which consists of the interlayer and heat sealant layer which carry out a laminating through an adhesives layer according to a base material sheet and a request This base material sheet is a biaxially oriented film, and this middle class's presentation is a consistency 0.900 thru/or the ethylene and alpha olefine copolymer of 0.940 g/cm<sup>3</sup> (it is hereafter indicated as an E-O copolymer.). The styrene butadiene copolymer with which the "styrene 100 weight section and a butadiene consist of 10 thru/or the 100 weight sections to the 100 weight sections (it is indicated as a S-B copolymer below.) " -- it is the lid material for carrier tapes constituted from 50 thru/or the 250 weight sections. Moreover, said heat sealant layer is the lid material for carrier tapes which contains [ the conductive impalpable powder of a tin oxide system, a zinc oxide system, indium oxide, and titanium

oxide ] 2 thru/or 30 weight sections for 10 thru/or the 350 weight sections, and an inorganic system filler to the HS nature resin constituent 100 weight section. And the particle diameter of said inorganic system filler is the lid material for carrier tapes which is average coating thickness Mino 0.4 of a heat sealant layer thru/or 3 times. Moreover, the surface resistivity of said heat sealant layer is 105. Or it is 1012ohm/\*\*, and is the lid material for carrier tapes to which the charge damping time does not exceed 2 seconds.

[0005]

[Description of the Prior Art] Conventionally, predetermined reinforcement is required by heat sealing with a carrier tape and its lid material so that lid material may exfoliate during transportation and storage and there may be that no electronic parts drop [ de] in it. However, when peel strength was too strong and lid material was exfoliated at the mounting process of electronic parts, there was a problem that the accident on which a carrier tape vibrates and electronic parts jump out of the pocket of a carrier tape occurred.

Therefore, when lid material is heat sealed by sufficient reinforcement for a carrier tape and electronic parts are mounted, it is required that the detachability should be good. Adjusting this peel strength on condition that heat-sealing temperature, time amount, a pressure, etc. had the problem of being very difficult.

Moreover, after rolling round during preservation and heat sealing a carrier tape and lid material as mentioned above it not only blocking in the condition, but, the non-heat sealing section 12 shown in drawing 2 pasted up, and the heat sealant layer which gave low-temperature heat-sealing nature also had the problem of having a bad influence on peel strength. Moreover, even when the peel strength (10-120g/(mm)) of fitness was obtained, when the zip rise of peel strength was large, the stowed position of electronic parts was not stabilized, but it also became clear that it might jump out of a pocket depending on the case.

[0006] Scouring a conductive carbon black particle and a metal particle on a carrier tape, or carrying out coating of the coating liquid containing these to it as a generating prevention means of static electricity in the lid material of a carrier tape, is performed. Moreover, scouring antistatic agents, such as a surface active agent, a conductive carbon black particle, and a metal particle in the heat sealant layer which contacts electronic parts and directly, or carrying out coating of the coating liquid containing these to it as a means of the static electricity generating prevention in lid material, is performed.

[0007] However, the conductive carbon black particle and metal particle which are the antistatic agent contained in an above-mentioned carrier tape and above-mentioned lid material reduced the transparency of a sheet, and had the problem of being hard to check the electronic parts contained from the outside.

Moreover, when coating of the surfactant was carried out, there was a problem of having deposited on the front face of the heat sealant layer of lid material, and heat-sealing nature having become unstable, and becoming the cause of poor heat sealing.

[0008]

[Embodiment of the Invention] In the lid material 5 of the carrier tape which consists of an interlayer 3 and a heat sealant layer 4 through the base material sheet 1 and the adhesives layer 2 prepared if needed as the lid material of this invention is shown in drawing 1 This base material sheet is a biaxially oriented film, and this interlayer's presentation is a consistency 0.900 thru/or 0.940 g/cm<sup>3</sup>. As opposed to the E-O copolymer 100 weight section "The S-B copolymer with which the styrene 100 weight section and a butadiene consist of 10 thru/or the 100 weight sections" consists of 50 thru/or the 250 weight sections. Moreover, the heat sealant layer 4 uses conductive impalpable powder 7 of a tin oxide system, a zinc oxide system, an indium oxide system, and/or a titanium oxide system as a principal component for HS nature resin constituent 8 to the 100 weight sections, and contains 2 thru/or 30 weight sections for the 10 - 350 weight section, inorganic, and the inorganic system filler 6. And moreover the particle diameter of said inorganic system filler is average coating thickness Mino 0.4 of said heat sealant layer thru/or a 3 times as many thing as this, the surface resistivity of said heat sealant layer 4 is 105. Or it is 1012ohm/\*\*, and is the lid material 5 for carrier tapes to which the charge damping time does not exceed 2 seconds.

[0009] The "average coating thickness" indicated on these specifications is the thickness assumed to be the thing in which the film with a uniform heat sealant layer was formed, and it computes as follows. A consistency D is measured by the usual approach about the solid content which carried out desiccation solidification of the solvent of heat sealant layer coating liquid. And the amount G of coating of a heat sealant layer (solid content g/m<sup>2</sup>) is measured, and average thickness T (micrometer) is computed from several 1 formula.

[0010]

[Equation 1]  $T=G/D$  [0011] The oriented film used for the base material sheet of this invention is a thing with a thickness of 3-25 micrometers which extended the film to 1 \*\*\*\* 2 shaft orientations, and was produced from thermoplastics, such as polyamides, such as polyolefines, such as polyester, such as

polyethylene terephthalate and polyethylenenaphthalate, and polypropylene, and nylon, and a polycarbonate. And since reinforcement with an interlayer is strengthened and it is stabilized, surface treatment, such as preparing corona discharge treatment, plasma treatment, sandblasting processing, and a primer layer for the side which prepares an interlayer beforehand if needed, can also be performed. Furthermore, a surfactant etc. is made to scour and antistatic treatment can be performed.

[0012] And a base material sheet can also be formed by using the above-mentioned oriented film by the monolayer at least, or compounding congener, an oriented film of a different kind, or a two-layer film with an unstretched film through an adhesives layer. An adhesives layer uses polyester system resin, polyether system resin, urethane system resin, a vinyl system copolymer, ethylene acrylic resin, the poly thiol, an epoxy resin, etc. as a principal component, and has tolylene diisocyanate, 4,4'-diphenylmethane diisocyanate, hexamethylene di-isocyanate, isophorone diisocyanate, xylenediisocyanate, naphthylene-1,5-diisocyanate, polyamine, etc. as the curing agent.

[0013] If needed, using conductive impalpable powder, such as a surface active agent, conductive carbon black, metal vacuum evaporation, and a metallic oxide, etc., antistatic treatment can be performed, the opposite field, i.e., outermost side, with a heat sealant layer of a base material sheet, and generating of static electricity by contact to antisticking, such as dust and Chile, or other fields can be prevented on the front face of the base material sheet 2 in it.

[0014] Although anything of a homopolymer, a copolymer, and a polymer alloy can be used, the resin used for an interlayer can be selected from a thing with an operation of cushion effect, when heat sealing a carrier tape and lid material, while it regulates bond strength (peel strength) with a heat sealant layer. For example, it can form by the polymer alloy which becomes with polyester, polyethylene, an ethylene-vinylacetate copolymer, an ethylene acrylic-acid copolymer, an ethylene acrylic ester copolymer, an ionomer, ethylene propylene rubber, and two or more sorts of resin that contains the polyethylene and the S-B copolymer other than polypropylene at least among polyethylene, a S-B copolymer, a S-B copolymer hydrogenation object, polystyrene, and high impact polystyrene.

[0015] the interlayer of this invention -- glass-transition temperature -- a line 40 degrees C or more -- it can also form with saturated polyester. glass-transition temperature -- a line 40 degrees C or more -- as saturated polyester, it is polyester by the dicarboxylic acid by aromatic series dicarboxylic acid, such as aliphatic series dicarboxylic acid and terephthalic acids, such as alcoholic components, such as ethylene glycol, propylene glycol, 1,4-butanediol, 1, and 4 cyclohexane dimethanol, and an adipic acid, a sebacic acid, isophthalic acid, and a diphenyl carboxylic acid, etc., for example. Specifically, a copolycondensation polymer with ethylene glycol, a terephthalic acid and ethylene glycol, isophthalic acid and/or a terephthalic acid, 1, and 4 cyclohexane dimethanol and ethylene glycol, a terephthalic acid and propylene glycol, a terephthalic acid, isophthalic acid, etc. is used. Moreover, having set glass-transition temperature as 40 degrees C or more originates in the environmental condition which uses lid material not resulting in 40 degrees C.

[0016] Moreover, as an interlayer, the following thermoplastics is made into a subject and can be constituted.

\*\* Polyolefine system resin, such as ethylene propylene rubber, polybutene, an ethylene butene-1 copolymer, an ethylene-vinylacetate copolymer, and an ionomer.

\*\* Polystyrene system resin, such as a styrene isoprene copolymer.

\*\* Ethylene acrylic copolymers, such as an ethylene acrylic-acid copolymer, a methacrylic acid copolymer, an ethylene ethyl-acrylate ester copolymer, an ethylene acrylic-acid methyl ester copolymer, and an ethylene methacrylic acid methyl ester copolymer.

\*\* Adhesive resin, such as copolycondensation polymerization polyester and maleic-anhydride graft polyethylene.

\*\* Thermoplastic elastomer.

[0017] If it is hard to deal with it since the film has strong adhesiveness and becomes below 50 weight sections to the styrene 100 weight section, when butadienes are more than the 250 weight sections, when heat sealing by falling the property as an elastomer, the adhesion of a carrier tape and the heat sealant layer of lid material will be changed, and the S-B copolymer which forms the middle class will lack the homogeneity of peel strength.

[0018] 15-60 micrometers is also desirable, is the usual film production approach by the inflation method by the circular dice, and the cast method by T dice, and can create the thickness of the interlayer of this invention by the monolayer or the multilayer. Thickness does not do cushion effect so in 15 micrometers or less, and film production fitness is inferior. In 60 micrometers or more, for the heat of dissolution of a

certain thing, cushion effect needs many heating values for heat sealing, and may reduce heat-sealing fitness. Moreover, it may have bad effect on peel strength, especially a zip rise.

[0019] The laminating of an interlayer and a base material sheet can also consist of sandwiches laminations using general-purpose resin, such as low density polyethylene, through the anchor coat layer used not only for the dry lamination through an adhesives layer but for a melting extrusion coat.

[0020] Although HS nature resin constituent is based also on the quality of the material of a carrier tape, it can consist of usual thermoplastics, plasticizers, lubricant, antiblocking agents, and antistatic agents. thermoplastics -- polyurethane, vinyl chloride vinyl acetate copolymers (what contains a maleic anhydride, ethylene glycol, etc. as the third component), acrylic resin, and a carbon number -- eight or more diamines -- and -- or it is formed from tackifiers, such as a polyamide containing dicarboxylic acid, an ethylene-vinylacetate copolymer, an ethylene acrylic-acid copolymer, an ethylene acrylic ester copolymer, and rosin, its derivative, and the mixture chosen from the hydrocarbon system wax etc. Moreover, a distributed stabilizer and an antiblocking agent can be included in a heat sealant layer if needed.

[0021] The lid material of this invention can adjust the peel strength between the interlayers and heat sealant layers when exfoliating, after heat sealing between a carrier tape and lid material depending on the combination of an interlayer and a heat sealant layer. In this case, the thin film of a heat sealant layer may remain between the carrier tapes and lid material which are a shaping container. In such a case, thickness of a heat sealant layer can be made thin with 5 micrometers or less, or film reinforcement (between layers or breaking strength) of a heat sealant layer can be weakened, and it can prevent.

[0022] 10-120g /of peel strength of the above-mentioned lid material is [ mm ] 10-70g/mm still more preferably in the 180-degree exfoliation under the ambient atmosphere of 40% of 23-degree-C relative humidity (a part for 300mm/in exfoliation rate). When not filling [ mm ] peel strength in 10g /, the lid material heat sealed may exfoliate during conveyance of a carrier tape, and contents may drop out. Moreover, when exfoliating lid material, a carrier tape vibrates, and the case of 120g/mm or more has a possibility that contents may jump out.

[0023] Moreover, a zip rise has desirable mm in 30g /or less. If a zip rise exceeds mm in 30g /, it is [ a possibility that a carrier tape may vibrate and contents may jump out ] and is not desirable in case lid material is exfoliated. In addition, the numeric value of peel strength here and a zip rise carries out the seal of a carrier tape and the lid material with the heat-sealing bar of 0.5mm width x2 train in the heat-sealing section 11, as shown in drawing 2 , and it calls a zip rise the difference of peel strength, its maximum, and the minimum value for the average value acquired from the strong maximum and the strong minimum value when exfoliating in a longitudinal direction.

[0024] The heat sealant layer of the lid material of this invention is constituted by polyester, polyurethane, a vinyl chloride and a vinyl acetate system copolymer, acrylic resin, the above-mentioned HS nature resin constituent that consists of at least one sort of a polyamide, an inorganic system filler, a conductive particle, etc. The constituent with which polyurethane carried out 10-150 weight section mixing of a vinyl chloride and the vinyl acetate system copolymer to the 100 weight sections, and polyester can mention the mixed constituent with which a vinyl chloride and a vinyl acetate system copolymer consist of the 100 - 6 weight section, the mixed constituent with which a vinyl chloride and a vinyl acetate system copolymer consist of the 100 - 6 weight section to the acrylic resin 100 weight section to the 100 weight sections to the combination of two or more sorts of thermoplastics. moreover, an interlayer's glass-transition temperature -- a line 40 degrees C or more -- when based on saturated polyester, it is desirable to use the mixture of polyurethane, and a vinyl chloride and a vinyl acetate system copolymer.

[0025] the heat sealant layer of this invention -- an inorganic system filler -- the HS nature resin constituent 100 weight section -- receiving -- 2 - 30 weight \*\*\*\*\* -- things are desirable. if an inorganic filler becomes more than 30 weight sections, although it will be based also on the class of filler, transparency falls, and there are many peel strength, and the sealing performance as lid material of a carrier tape being weakly unmaintainable not only but zip rise values -- \*\* -- there are things. Moreover, blocking may be caused in the addition of the inorganic system filler below 2 weight sections.

[0026] The particle diameter of an inorganic system filler has a desirable thing with a diameter 0.4 to 3 times average coating thickness Mino of a heat sealant layer of this. When particle diameter is made into 0.4 or less times, since HS nature resin constituent exists in the front face of a heat sealant layer, it may generate blocking. Moreover, in the case of 3 or more times, since the resin which fixes a particle becomes 1/3 or less, a filler not only drops out of a coating side, but transparency falls. Furthermore, a zip rise value also becomes large and is not desirable.

[0027] The conductive particle and organic silicon compound which gave conductivity to sulfates, such as

sulfides, such as metallic oxides, such as tin oxide, a zinc oxide, indium oxide, and titanium oxide, zinc sulfide, copper sulfide, a cadmium sulfide, a nickel sulfide, and sulfuration palladium, a sodium sulfate, potassium sulfate, and a barium sulfate, are contained in the heat sealant layer. That such whose primary mean particle diameter of a conductive particle is 0.01-10 micrometers is desirable. In this case, as for the mixed ratio of the conductive particle to the HS nature resin constituent 100 weight section in a heat sealant layer, it is desirable that it is in the range of the 10 - 350 weight section. If there is no antistatic effectiveness that the ratio of a conductive particle is less than ten and 350 is exceeded, transparency will be spoiled and it is not desirable.

[0028] The surface resistivity of the heat sealant layer of this invention On the conditions of 50% of 23-degree-C relative humidity (hereafter, especially surface electrical resistance indicates the numeric value measured on this condition, unless it specifies.) (A duration (it is indicated as the charge damping time below.), i.e., the charge damping time, until it decreases 99% from 5000V which are in the range of 105-1012ohms / \*\*, and were measured in 23\*\*5 degrees C and 12\*\*3% of relative humidity) It has the outstanding static electricity diffusibility for 2 or less seconds. If the above-mentioned surface resistivity exceeds 1012ohms / \*\*, the static electricity diffusibility will fall and it will become difficult to protect electronic parts from the static electricity destruction. Moreover, 105 When it becomes under omega/\*\*, it will energize from the exterior to electronic parts through lid material, and there is a danger of being destroyed electrically. If the charge damping time which, on the other hand, serves as an index of the diffusion rate of the charge generated with static electricity exceeds 2 seconds, the static electricity spreading effect will get extremely bad, and it will become difficult to protect electronic parts from the static electricity destruction. In addition, above-mentioned surface resistivity and the above-mentioned charge damping time are measured based on U.S. MIL-B81705C.

[0029] A heat sealant layer can be created using the usual coating means, such as a roll coat and a gravure coat. And 0.1-10 micrometers of the coating thickness are 1-5 micrometers preferably.

[0030] The quality of the materials of the carrier tape set as the use object of the lid material of this invention are a polyvinyl chloride, polystyrene, polyester, polypropylene, a polycarbonate, a polyacrylonitrile, ABS, etc. Or there are some which scour the conductive impalpable powder, organic silicon compound, or surfactant which gave these the conductive carbon black particle and the metal particle, and gave conductivity to the metallic oxide as an antistatic cure, or carry out coating of the thing containing these. Moreover, the thing in which the conductive polymer was formed is mentioned to the front face of the multilayer sheet which carried out the laminating of the polystyrene system or ABS system resin which contains carbon black to one side or both sides of a polystyrene system or an ABS system resin sheet to one by the co-extrusion, and a sheet plastic.

[0031] Next, a concrete example is shown and the lid material of this invention is further explained to a detail.

(Example 1 of an experiment) it is shown in drawing 1 -- as -- as an E-O copolymer -- consistency 0.930 g/cm<sup>3</sup> a line -- the constituent which consists of the polyethylene 100 weight section and "the S-B copolymer 150 weight section which consists of the styrene 100 weight section butadiene 55 weight section" was produced as an interlayer 3 with a thickness of 30 micrometers by the tubular film process by the circular dice. Furthermore, the laminating of biaxial-stretching polyester film with a thickness of 12 micrometers and the above-mentioned interlayer 3 was carried out by the dry lamination through the reactive adhesive layer 2 of a polyester isocyanate system as a base material sheet 1. Subsequently, the coating liquid which distributed the heat sealant layer constituent shown in Table 1 at a middle class 3 side with the vehicle which dissolved in a suitable quantity of the solvent was carried out on the gravure reverse coat, coating of the average coating thickness was carried out by 2-3 micrometers, the heat sealant layer 4 was formed, and the lid material 5 of an example and the example of a comparison was created.

- An interlayer's configuration: (an interlayer's presentation)

\*\* E-O copolymer : ULTZEX 3550 [trade name by Mitsui Petrochemical Industries, Ltd.] consistency =0.935 g/cm<sup>3</sup> 30 weight section \*\*S-B copolymer: Asa FREX 810 [ trade name by Asahi Chemical Industry Co., Ltd.]

Copolymer of the styrene 100 weight section and the butadiene 55 weight section 40 weight sections (heat sealant layer constituent)

- Polyurethane NIPPORAN 5120 20 weight sections [ trade name by Japan polyurethane industrial incorporated company]

- A vinyl chloride and vinyl acetate system copolymer Vinylite VAGH Ten weight sections [Union Carbide trade name]

- Conductive impalpable powder Conductive particle Pasto Laon IV Addition shown in Table 1 [trade name by Mitsui Mining and Smelting Co., Ltd.]
- Silica (addition shown in Table 1)
- Solvent (a methyl ethyl ketone, ethyl acetate) Suitable amount (following abbreviation) [0032]

[Table 1] The presentation of the heat sealant layer filler of an example and the example of a comparison

試料		導電性 フィラーの 添加量 (重量部)	シ リ カ		ヒートシーラント層	
			粒 径 μm	添加量 (重量部)	平均塗工厚み μm	シリカの 厚み比
実 施 例	1	180	1.5	10	3	0.5
	2	180	3	10	3	1.0
	3	230	2	25	2	1.0
	4	20	4	10	2	2.0
比 較 例	1	160	0.6	20	3	0.2
	2	160	6.5	15	2	3.3
	3	180	3	0.5	3	1.0
	4	180	2.5	50	3	0.8
	5	5	3	10	2	1.5
	6	450	2	25	2	1.0

However, the thickness ratio of a silica is a numeric value over the average thickness of a heat sealant layer. [0033] The following approach estimated the sample of an example and the example of a comparison. The result is shown in Table 2.

\*\* A haze value and total light transmission : measure by Suga Test Instruments Co., Ltd. color computer SM-5SC.

\*\* Surface resistivity : measure by Mitsubishi Chemical Huy Lester IP under 23 degrees C and 45% of relative humidity.

\*\* Charge damping time : measure the time amount taken to decrease 99% from 5000V under 23 degrees C and 12% of relative humidity based on MIL-B-81705C.

\*\* Peel strength : each sample which carried out the slit to the polyvinyl chloride nature carrier tape with a width of 24mm is used for a width of 21.5mm for 150 degrees C and 0.4 seconds on condition that delivery pitch 12mm and seal width [ of 0.5mm ] x2 train, use after heat sealing and a peel strength circuit tester (van guard VG-20) with a heat-sealing machine (van guard VN-1100), measure reinforcement by 180-degree exfoliation, and compute an average with the maximum and minimum value.

\*\* Zip rise value : compute the difference of strong maximum and the minimum value.

\*\* Blocking-proof test : the unsettled polyethylene terephthalate used as the heat sealant layer of lid material and the front face of lid material and surface-active-agent coating polyethylene terephthalate, the polyvinyl chloride that serves as a carrier tape at a list, A-PET, a polycarbonate, polystyrol, etc. were used as the symmetry carrier tape, and under pressure 2 kg/cm<sup>2</sup>, 40 degrees C of preservation conditions, and conditions of 90% of relative humidity, it was kept for 14 days and evaluated, respectively. (Valuation basis of a blocking test)

1: With no blocking.

2: Although adhesion is carried out a little, exfoliate easily and the trace does not exist.

3: Stick a little, and when it exfoliates, the trace remains.

4: There is blocking and a heat sealant layer pastes a symmetry carrier tape in part.

5: There is blocking, and a heat sealant layer pastes up and exfoliates with a symmetry carrier tape on the whole surface.

(Following margin)

[0034]



[Table 2]

試料		ヘーズ度	全光線透過率	表面抵抗率 $\Omega/\square$	電荷減衰 時間 秒	剥離強度 g/mm	ジップアップ g/mm
実施例	1	68	87	$2 \times 10^6$	0.1>	43	18
	2	69	85	$4 \times 10^6$	0.1>	39	19
	3	73	88	$1 \times 10^6$	0.1>	36	21
	4	70	83	$2 \times 10^8$	0.1>	41	19
比較例	1	66	89	$3 \times 10^6$	0.1>	46	16
	2	85	68	$3 \times 10^6$	0.1>	37	59
	3	82	90	$2 \times 10^6$	0.1>	40	18
	4	86	62	$4 \times 10^6$	0.1>	18	32
	5	66	91	$3 \times 10^{13}$	5.0	28	14
	6	89	48	$6 \times 10^6$	0.1>	43	26

(Following margin)

[0035]

試料		対称キャリアテープの素材					
		未処理PET	帯防PET	PVC	A-PET	PC	PS
実施例	1	1	1	1	1	1	1
	2	1	1	1	1	1	1
	3	1	1	1	1	1	1
	4	1	1	1	1	1	1
比較例	1	4	3	4	4	4	4
	2	1	1	1	1	1	1
	3	4	3	4	4	4	4
	4	1	1	1	1	1	1
	5	3	3	3	3	3	3
	6	2	2	2	2	2	2

[Table 3] Blocking-proof test

however -- PET: -- polyethylene terephthalate \*\*\*\* PET:surface-active-agent coating polyethylene terephthalate PVC: -- polyvinyl chloride PC: -- polycarbonate PS: -- polystyrol and [0036]

[Effect of the Invention] The lid material in which the lid material of a carrier tape which prepared the interlayer who becomes a base material sheet from a S-B copolymer and an E-O copolymer, and prepared the heat sealant layer further contains an inorganic filler with large conductive impalpable powder and particle size does so the peel strength stabilized in order that an interlayer might present cushion effect, and the effectiveness which makes a zip rise the minimum. Moreover, an inorganic filler exists in the front face of a heat sealant layer, and does the effectiveness of blocking prevention so.

[Translation done.]

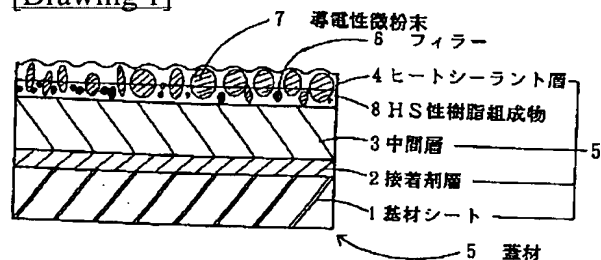
## \* NOTICES \*

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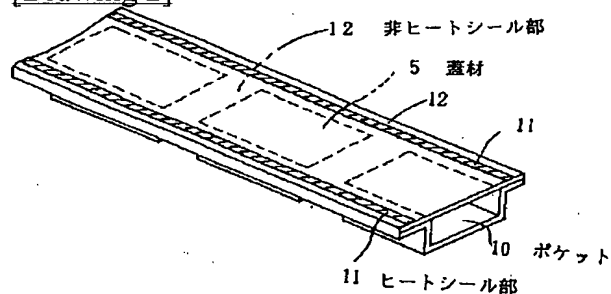
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

[Drawing 1]



[Drawing 2]



[Translation done.]